

Attorney's Docket No.: 10559-494001 / P11786

Applicant : James R. Trethewey
Serial No. : 09/955,469
Filed : September 18, 2001
Title : LOAD BALANCING AND FAULT TOLERANCE FOR SERVER-BASED
SOFTWARE APPLICATIONS

Art Unit : 2151
Examiner : Khanh Dinh

PENDING CLAIMS

1. (Previously Amended) A method of providing a remote networked computer with a service session using one of a plurality of similarly functioning software applications residing on different servers with different unique real network addresses, the method comprising:

receiving, from the remote computer and at a device having a unique network address that is different from the network address of any of the servers, a packet-based message comprising a request for a service session;

assigning one of the several servers to be used by the remote computer in the service session; and

transmitting, to the remote computer, a packet-based message comprising the unique real network address of the assigned server for the remote user to address subsequent messages during the service session.

2. (Previously Amended) The method of claim 1 further comprising receiving, at the assigned server, subsequent packet-based messages from the remote computer as part of the service session, the subsequent messages each being addressed to the unique real network address of the assigned server.

3. (Original) The method of claim 2 further comprising, receiving, at the assigned server, periodic packet-based test messages from the remote computer, and in response, transmitting a packet-based message back to the remote computer to indicate an operable connection.

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4. (Original) The method of claim 1, wherein the device that receives the message comprising a request for a service session is a load balancer.
5. (Original) The method of claim 1, wherein the software applications involve interaction between multiple remote computers.
6. (Original) The method of claim 5, wherein the software applications provide Internet telephony service.
7. (Original) The method of claim 5, wherein the software applications are multiple-user gaming applications.
8. (Original) The method of claim 5, wherein the software applications are music-sharing applications.
9. (Original) The method of claim 5, wherein the software applications are peer-to-peer applications.
10. (Original) The method of claim 4, wherein the message comprising a request for a service session includes a network address header containing the unique network address of the load balancer, a data port address header, and data fields associated with the software application.
11. (Original) The method of claim 10, wherein the data fields associated with the software application includes a length field, a type field, and a field containing the network address of the remote computer that requested the service session.
12. (Previously Amended) The method of claim 1, wherein the message transmitted to the remote computer comprising the unique real network address of the assigned server includes a network address header containing a unique network address associated with the

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remote computer that requested the service session, a data port address header, and data fields associated with the software application.

13. (Previously Amended) The method of claim 12, wherein the data fields associated with the software applications includes a length field, a type field, and a field containing the unique real network address of the assigned server.

14. (Previously Amended) The method of claim 1, wherein the unique real network addresses are all unique IP addresses.

15. (Previously Amended) The method of claim 1, wherein the packet-based message comprising the unique real network address of the assigned server is transmitted by the assigned server.

16. (Previously Amended) The method of claim 1, wherein the packet-based message comprising the unique real network address of the assigned server is transmitted by a load balancer.

17. (Previously Amended) An apparatus for providing service sessions to remote networked computers, comprising:

a plurality of servers each having a different unique real network address, each of the servers for executing a similarly functioning software application to provide a service session;

a load balancer having a unique network address different from the unique real network address of any of the servers, the load balancer comprising a first processor and first memory for storing thereon instructions that when executed by the first processor assigns, in response to receiving from a remote networked computer a packet-based message comprising a request for a service session, one of the servers to be used by the remote computer in the service session;

a second processor and second memory for storing thereon instructions that when executed by the second processor transmits, to the remote networked computer that requested service, a packet-based message containing the identity of the unique real network address of the

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assigned server to which the remote networked computer is to address packet-based messages during the service session.

18. (Original) The apparatus of claim 17, wherein the first and second processors are the same, and the first and second memory are the same, the second processor and second memory thus being part of the load balancer.

19. (Original) The apparatus of claim 17, wherein the second processor and the second memory are part of the assigned server.

20. (Original) The apparatus of claim 17, wherein the software applications involve interaction between multiple remote users.

21. (Original) The apparatus of claim 20, wherein the software applications are Internet telephony applications.

22. (Original) The apparatus of claim 20, wherein the software applications are multiple user gaming applications.

23. (Original) The method of claim 20, wherein the software applications are music-sharing applications.

24. (Original) The method of claim 20, wherein the software applications are peer-to-peer applications.

25. (Original) The apparatus of claim 17, wherein the message comprising a request for a service session includes a network address header containing the unique network address of the load balancer, a data port address header, and data fields associated with the software application.

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26. (Original) The apparatus of claim 25, wherein the data fields associated with the software application includes a length field, a type field, and a field containing the network address of the remote computer that requested the service session.

27. (Previously Amended) The apparatus of claim 17, wherein the message transmitted to the remote computer comprising the unique real network address of the assigned server includes a network address header containing a unique network address associated with the remote computer that requested the service session, a data port address header, and data fields associated with the software application.

28. (Previously Amended) The apparatus of claim 27, wherein the data fields associated with the software applications includes a length field, a type field, and a field containing the unique real network address of the assigned server.

29. (Previously Amended) The apparatus of claim 17, wherein the unique real network addresses are all unique IP addresses.

30. (Previously Amended) An apparatus that assigns, for a service session, one of a plurality of servers with unique real network addresses, each of the plurality of servers being capable of executing a similarly functioning software application to provide the service session, the apparatus comprising:

a unique network address that is different from the unique real network address of any of the plurality of servers;

a processor; and

memory for storing thereon instructions that when executed by the processor perform the following functions:

assigns one of the servers to be used by a remote computer in the service session in response to receiving a packet-based message comprising a request for the service session from the remote computer; and

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transmits, to the remote computer that requested the service session, a packet-based message containing the unique real network address of the assigned server to which the remote computer is to address packet-based messages during the service session.

31. (Original) The apparatus of claim 30, wherein the message comprising a request for a service session includes a network address header that contains the unique network address of the apparatus, a data port address header, and data fields associated with the software application.

32. (Original) The apparatus of claim 31, wherein the data fields associated with the software application includes a length field, a type field, and a field containing the network address of the remote computer that requested the service session.

33. (Previously Amended) The apparatus of claim 30, wherein the message transmitted to the remote computer comprising the unique real network address of the assigned server includes a network address header containing a unique network address associated with the remote computer that requested the service session, a data port address header, and data fields associated with the software application.

34. (Previously Amended) The apparatus of claim 33, wherein the data fields associated with the software applications includes a length field, a type field, and a field containing the unique real network address of the assigned server.

35. (Previously Amended) Computer readable medium having stored thereon program instructions that, when executed by a processor in a networked computer, perform the following functions:

transmits, in response to a predetermined user command input to the networked computer, a packet-based message comprising a request for a service session to a remote service provider, the message being addressed to a unique network address associated with the service provider, the service provider comprising a plurality of different servers with different unique

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real network addresses, each of the servers having thereon similarly functioning software applications to provide a service session;

in response to receiving from the service provider a packet-based message comprising a unique real network address for one of the plurality of servers that has been assigned for the service session, transmits during the service session packet-based messages addressed to the unique real network address of the assigned server.

36. (Original) The computer readable medium of claim 35, wherein the service session involves interaction between multiple networked computers remote from the service provider.

37. (Original) The computer readable medium of claim 36, wherein the service session is an Internet telephony application.

38. (Original) The computer readable medium of claim 36, wherein the service session is a multiple-user gaming application.

39. (Previously Amended) The computer readable medium of claim 35, further comprising instructions that when executed by the processor perform the following functions:
periodically transmits during the service session packet-based test messages addressed to the unique real network address of the assigned server;

determines that a connection with the assigned server is disconnected if a packet-based message responding to the test message is not received from the assigned server within a predetermined period of time.

40. (Original) The computer readable medium of claim 39, further comprising instructions that when executed by the processor perform the following function:
in response to determining that a connection with the assigned server is disconnected, transmits a packet-based message comprising a request for a service session to the

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remote service provider and addressed to the unique network address associated with the service provider.

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